

CLAIMS

1. A speech transmitting and receiving apparatus, comprising:
a first converter (2) converting speech from an analog signal to a digital signal;
5 a speech encoder (3) encoding a speech signal converted by said first converter (2) into the digital signal;
a transmission processing circuit (4) transmitting the speech signal encoded by said speech encoder (3);
a reception processing circuit (12) receiving an encoded speech receiving signal;
10 a speech decoder (13) decoding the speech receiving signal received by said reception processing circuit (12);
a sidetone circuit (7a, 7b, 7e, 7f) suppressing noise contained in the speech signal converted by said first converter (2) into the digital signal to generate a sidetone to be added to the speech receiving signal decoded by said speech decoder (13); and
15 a second converter (15) converting the speech receiving signal with the sidetone added from a digital signal to an analog signal.
2. The speech transmitting and receiving apparatus according to claim 1, wherein said sidetone circuit (7a) includes:
20 a noise suppressor (8) suppressing the noise contained in the speech converted by said first converter (2) into the digital signal, and
a sidetone level controller (9) controlling a level of the speech signal with the noise suppressed by said noise suppressor (8), for output as the sidetone.
- 25 3. The speech transmitting and receiving apparatus according to claim 1, wherein said sidetone circuit (7b) includes:
a noise suppressor (8) suppressing the noise contained in the speech converted by said first converter (2) into the digital signal, and

a sidetone level controller (9') controlling, according to a level of the speech signal with the noise suppressed by said noise suppressor (8) and a level of the speech receiving signal decoded by said speech decoder (13), said level of the speech signal with the noise suppressed, for output as the sidetone.

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4. The speech transmitting and receiving apparatus according to claim 1, wherein said sidetone circuit (7e) includes:

a noise suppressor (8) suppressing the noise contained in the speech converted by said first converter (2) into the digital signal,

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a background noise level detector (6) detecting a level of background noise contained in the speech converted by said first converter (2) into the digital signal, and

a sidetone level controller (9') selecting one of the speech converted by said first converter (2) into the digital signal and the speech signal with the noise suppressed by said noise suppressor (8) according to the level of the background noise detected by said background noise level detector (6), and controlling a level of the selected speech signal for output as the sidetone.

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5. The speech transmitting and receiving apparatus according to claim 1, wherein said sidetone circuit (7f) includes:

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a noise suppressor (8) suppressing the noise contained in the speech converted by said first converter (2) into the digital signal,

a background noise level detector (6) detecting a level of background noise contained in the speech converted by said first converter (2) into the digital signal, and

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a sidetone level controller (9f) selecting one of the speech converted by said first converter (2) into the digital signal and the speech signal with the noise suppressed by said noise suppressor (8) according to the level of the background noise detected by said background noise level detector (6), and controlling, according to a level of the selected speech signal and a level of the speech receiving signal decoded by said speech decoder

(13), said level of the selected speech signal, for output as the sidetone.

6. A speech transmitting and receiving apparatus, comprising:

a first converter (2) converting speech from an analog signal to a digital signal;

5 a noise suppressor (8) suppressing noise contained in a speech signal converted by said first converter (2) into the digital signal;

a speech encoder (3) encoding the speech signal with the noise suppressed by said noise suppressor (8);

10 a transmission processing circuit (4) transmitting the speech signal encoded by said speech encoder (3);

a reception processing circuit (12) receiving an encoded speech receiving signal;

a speech decoder (13) decoding the speech receiving signal received by said reception processing circuit (12);

15 a sidetone circuit (7c, 7d) generating a sidetone according to the speech signal with the noise suppressed by said noise suppressor (8); and

a second converter (15) converting the speech receiving signal with the sidetone added from a digital signal to an analog signal.

20 7. The speech transmitting and receiving apparatus according to claim 6, wherein said sidetone circuit (7c) includes a sidetone level controller (9) controlling a level of the speech signal with the noise suppressed by said noise suppressor (8), for output as the sidetone.

25 8. The speech transmitting and receiving apparatus according to claim 6, wherein said sidetone circuit (7d) includes a sidetone level controller (9') controlling, according to a level of the speech signal with the noise suppressed by said noise suppressor (8) and a level of the speech receiving signal decoded by said speech decoder (13), said level of the speech signal with the noise suppressed, for output as the sidetone.